Submitted by Richard C. Martin Jr. **October 18, 2006**
To: USDA Livestock Committee and NOSB
Re: Livestock Committee "Six issues"

1). Species or Production Method Specific Standards

In lieu of the limited amount of time in which to make comment, I would suggest that an initial consideration of species-specific standards be divided amongst the major sectors of carnivores and herbivores, open-net pen and land based systems with the intent to subdivide these categories at a later date.

2). Impact on the Environment

In respect to fundamental Organic principles any attempt to (directly) apply an agricultural standard to an aquatic system is difficult but not insurmountable given appropriate comparison and flexibility in the definition of each.

Open net-pen aquatic systems can minimize environmental impact through the reduction of input (feed) and maximizing of bio-efficiency within the feeding systems.

It can be argued that a combination of polyculture (the co-culture of plants, invertebrates and aquatic species of fish) can actually enhance the ecosystem within an aquatic environment. A combination of limited organic input (feed), introduction of invertebrates (filter feeders living off the effluent in surrounding water) and plant culture (contributing to the absorption of metabolic waste) can be considered to be a viable model that improves the environment in a location in which these factors are in balance.

More importantly however is the maximizing of bio-efficiency within the system that utilizes what would otherwise be discarded protein as a source of energy (re-cycled protein into fishmeal/feed) in as efficient a model as possible.

Currently the FCR (Feed Conversion Ratio) in an Organic salmon farm is approximately (1.4:1). Compared to Poultry (~2.5:1), Pork (~3.5:1) and Beef (~8:1); Organic salmon farming is an extraordinarily efficient system that minimizes effluent and environmental impact. If carnivorous aquatic species are required to consume less efficient feed (e.g. high percentage vegetable and reduced or eliminated fish meal content) the bio-efficiency is reduced or lost in the process which will increase negative environmental impact (i.e. the reduction in efficiency of feed conversion will increase the passage of unutilized feed in the form of fecal material increasing negative impact upon the environment).

3). Differences between Organic and Conventional Aquaculture Standards

Organic aquaculture standards deliver enhanced value to the consumer and maintain the integrity of the definition of the term organic in the following ways:

1). Organic aquaculture will maximize the delivery of Omega-3 fatty acid equity to the consumer if the feed composition remains as close to that found in nature as possible. A USDA NOP standard should eliminate feed components (e.g. corn derivatives) utilized in the conventional industry which tend to be rich in far less beneficial N-6 acids and fail not deliver equivalent N-3 (Omega-3) value. To reduce or eliminate Omega-3 rich fish protein in the feed will result in reduced nutritional value and health benefits to the consumer of Organic seafood (unless a suitable source containing the equivalent Omega-3 delivery is developed, which is environmentally sound and economically viable).

2). A USDA NOP standard should eliminate the use of therapeutic agents (e.g. antibiotics) which can be passed along to the consumer and mitigate the introduction of antibiotics into the environment in general.

3). A USDA NOP standard should eliminate the use of anti-parasite agents (e.g. chemicals used to kill or ward off ectoparasites // sea lice) which can potentially damage the surrounding ecosystem and/or create residue that may be passed along to the consumer or persist in the environment.

4). EU Organic aquaculture requirements mitigate environmental impact by limiting the use of fish oil (EU Organic @ max 24% vs. Conventional up to 50%) and eliminates the practice of "forcing" growth (i.e. excess/wasted calories) as seen in the conventional system. Accelerating growth through overfeeding fish in the conventional system places pressure upon foraging pelagic stocks used as a primary protein base and increases fecal effluent exacerbating environmental impact. The Organic system works within the "natural' growth rates of the species being raised by utilizing feed that is more efficiently converted which reduces environmental impact and (overall) consumption of fish meal and oil (vis-à-vis recycling of proteins used in fishmeal and the limitation of fish oil use).

5). A USDA NOP standard should follow the EU requirement to limit stocking densities to approximately 25% of the conventional system (current EU Organic @ 10 kg/m^3 vs. Conventional up to 45 kg/m^3) which mitigates environmental impact by the reduction in the overall footprint/site size; supporting fish health and help maintain stability in the surrounding environment and ecosystem.

6). A USDA NOP standard should follow the well established (EU) requirement to re-cycle all protein in fishmeal production (i.e. all fishmeal to be solely comprised of re-cycled fish trimmings produced for human food use). The re-cycled protein should be limited to fisheries only produced within safe biological limits as determined by such widely recognized, internationally organizations as FAO/ICES. This is currently the only truly "sustainable" fishmeal model in the aquaculture industry that sources a protein base which delivers the maximum omega-3 rich equity in the final consumer product.

6). A USDA NOP standard should eliminate the use of synthetic pigmenting agents and GMO feed components which are passed directly to consumers.

7). Flavor/taste. The flavor profiles of aquatic species that have been fed a diet rich in corn derivatives display a characteristic "bitter/heavy" aftertaste. A side-by-side taste test performed by Wine Spectator Magazine (Gugino; May, 2005) clearly rated EU Organic salmon as "superior tasting" over conventional farmed salmon and some wild species.

4). Use of Fish Meal and Fish Oil

Aquatic species have specific nutritional requirements that must be permitted to the extent the requirements are in compliance with the Organic Food Production Act. The certification of wild fisheries utilized in the creation of Organic feed should **not** be necessary to meet these criteria. It is the **production standards/requirements of the feed** (not the fish itself) that should be considered a **certifiable process** that complies with the OFPA while simultaneously viable on a biological and economic level.

The difficulty that faces the NOSB is the (apparent) need/confusion over the certification of wild-caught fish for use as feed. The parallel in the terrestrial model is the consumption of **wild** grass/vegetable matter on the pasture by certified Organic terrestrial creatures. The certified Organic beef steer is required to spend a certain amount of time in a pasture that has been certified. During that pasture time, that steer is free to consume any available feed that includes wild grasses, weeds and other vegetable matter.

Although the pasture itself is certified and all man applied/influenced input is contained, audited and recorded, the pasture remains open to the environment which includes rain, wind and other environmentally introduced elements that cannot be controlled for content, purity or origin including any and all environmental contaminants.

The feed components used in the aquatic system *can* be controlled to the extent that the components can be evaluated (tested), filtered/cleaned and adjusted to reduce or eliminate environmental contamination while sourced from renewable fisheries creating well controlled input that is similar if not as controllable as the terrestrial model.

The reduction of fish meal (protein) should not be arbitrarily established without consideration of the Omega-3 fatty acid value delivered in the final product to the consumer and meet the minimum dietary requirements of the animal raised for human consumption. Fish oil can and should be limited or substituted/combined with appropriate vegetable oils that can be converted efficiently without reducing Omega-3 fatty acid content.

To alter or manipulate the diet or convert the animal to a dietary regime other than that which it would naturally seek in the wild would be to create an analog that may or may not deliver the nutritional equity sought by the consumer and may in fact prove to be far less efficient and create rather than reduce environmental and ecological impact.

In addition aquatic species are continuously "at pasture" even as they are limited to net-pens or other open-water containment. The migratory (anadromous species) are living within an environment (ocean) as they would in the wild and are behaving (feeding/growing) as they would at that point in their life-cycle. The migratory behavior only begins when hormonal triggers cause the fish to express that behavior once they reach sexual maturity, which is not the case in aquaculture as the population is harvested pre-maturation. The fish are therefore not denied the ability to express any innate behavior and one could argue that the fish are actually living a comparatively far more comfortable existence; free from predators and without the stress of competition for each and every meal.

5). Sources of fish Meal and Fish Oil

The EU Organic rules require that all fishmeal protein is to be sourced from the aforementioned re-cycling process which utilizes protein from fish (already caught) for human consumption. This simple requirement utilizes what would otherwise be 100% waste and converts that waste into valuable Omega-3 rich consumer products.

My recommendation would be to maintain the use of fishmeal (only) produced from re-cycling (e.g. EU model) concurrent with the reduction of fish oil content to a maximum of 20% and/or replace/augment fish oil with suitable vegetable oils that can be proven to be as efficient on a nutritional/conversion level without appreciably reducing Omega-3 fatty acid content in the final product. This will also reduce effluent and the consumption of "empty calories".

6). Slaughter By-products in Aquaculture Feed

While the use of terrestrial animal by-products may be nutritionally viable (simply from a growth standpoint), any standard must intersect with commerce and the marketplace has already condemned that concept in an overwhelmingly negative manner.

While the classification of a food product as "Organic" does not guarantee or suggest purity or increased nutritional value, it does however strongly convey the concept of "natural" and (additive-free). The consideration by the consumer to purchase an Organic animal product raised upon feed not normally consumed by the animal (or completely foreign to the animal) does not intersect with consumer demand or expectations. As efficient and conservative as terrestrial proteins may present as protein sources for aquatic species; the consumer would not recognize the value or pursue (i.e. purchase) such a product.

Additional:

The study "Fish Intake, Contaminants and Human Health: Evaluating the Risks and the Benefits" (Mozaffarian/Rimm Harvard School of Public Health 2006) in JAMA (October 18, 2006) is unequivocal to state "Seafood is likely the single most important food one can consumer for good health" (Mozaffarian) and "…even a modest amount of seafood, such as 3 ounces of farmed salmon per week, reduces the risk of death from coronary heart disease by 36%" (Rimm).

Fish (any fish) rich in N-3 PUFA's (Omega-3 fatty acids) are, without question as valuable a food source as man can consume. The most widely produced (aquacultured) group of species with the greatest concentration of these beneficial fatty acids is salmonids.

The establishment of an organic standard for these species would directly benefit the human consumer by eliminating chemical input, reducing environmental impact and preserving the most valuable asset; the delivery of fatty acid equity.

As the population clock in the United States surpasses 300 million; it is certain that the protein base and nutritional value to our population cannot be collected off the hook in wild caught fisheries alone. The best model is the establishment of a robust, yet fair and equitable Organic standard for aquatic species that not only delivers protein at low environmental and ecological cost, but delivers the most important nutritional value to our society.